CONTENTS.

VOL. XXV.

	Page.
Acoustics in architecture	228
Action of railway brakes	289
Actual pressure of earthwork, 333,	353
Air, flow of through orifices	217
Air pump, new	329
Air, pure in dwellings	314
Alloys, copper-zinc-tin	374, 479
Alps, Simplon tunnel through, 297,	344
Anemometers, whirled	265
Aneroid, Goldschmid	300
Appliances, electrical	89
Application of steel	145
Architecture governed by technical principles	221
Architecture, house	133
Architecture, use of marble	200
Armor-plate trials	435
Asphalt pavement	257
Austrian torpedo boats	315
Baker on earthwork	492
Barometer, new	515
Basic converters, [illegible]tions in,	253
Bessemer process	345
Big gun from Cyprus	125
Book Notices.	
Aneroid, Science Series, No. 35	437
Bauerman, Hilary, Systematic Mineralogy	262
Burat, Amedee, Cour D'exploritation des Mines	86
Burat, Amedee Epuration de la Houille, criblage, Triage et Lavage	436
Campin, Francis, C. E., Mechanical Engineering	175
Dr. Carl Sachs' Unversuchengen am Zitteraal, Gymnotus Electricus	521
Faija, Henry, Portland Cement for Users	521
Frankel, Julius, Manufacture of Starch, Glucose, &c	86
Hardy, A. S., Ph. D., Elements of Quarternions	437
Haught, Lewis M., C. E., Working Drawings	85
Jones, Prof. Chapman, Experimental Organic Chemistry	261
Kempe, H. R., M. S. T. E., Electrical Testing	348
Kennedy, Alex B., Kinematics of Machinery	521
Lee, John E., F. G. A., Amateur Geologist	175
Matheson, E., M. I. C. E., Engineering Enterprise	262
Military Dictionary and Gazetteer	86
Neison, A., Kemp, D., and Davis, C. C., Boat Building and Sailing	436
Platt, Franklin, Survey of Pennsylvania	437
Resol, H., Traite de Mechanique Generale	436
Spitzli, Alfred, Textile Fabrics	348
Three Americas' Railway	261
Tucker, J. H., Ph. D., Sugar Analysis	348
Webb, Rev. T. W., Celestial Objects for Common Telescopes	436
Weinhold, Dr. Adolph F., Physicalische Demonstrationen	522
Young, C. A., Ph. D., LL.D., The Sun	437
Brakes, action of	289
Brass, foundin[illegible] in	304
Brake dynamometer	471
Brake question	59
Bridges, stiffness of	399
Bronzes, strongest of	126
Building arts of India	118
Canadian railways	432
Capacity of European churches	332
Carbonic oxide in iron and steel	162
Castings in iron	434
Castings, steel	279
Cesspool emptying by steam	172
Channel tunne[illegible].81, 257,	517
China's preparations for war	349
Cleaning incrusted pipes	303
Clyde steamers	258
Coating of metals	176
Coinage, new	470
Cold storage	263
Compound interest curve	385
Construction of permanent ways	432
Continuous brakes	59, 344
Continuous girders	49
Copper alloys, ductility of	374
Copper, founding in	304
Corrosion of iron and steel	75
Dampness; cause and cure	476
Daniell cells	349
Decimal system	88
Dephosphorization in France	81
Dephosphorization of iron	434
Dephosphorizing practice	513
"Detector"	435
Determining wind pressures	242
Development of electrical appliances	89
Deck armor for ships	520
Do steel ships pay?	452
Dupuy direct process	292
Dwellings, construction of	388
Dynamometer balance	471
Dynamo machine	350
Earthwork, lateral pressure of	492
Earthwork, pressure of	333, 353
Edison's lamps	439
Electrical appliances	89
Electrical energy, storage of	219
Electric conductivity of metal wires	438
Electric incandescent lamps	439
Electric lamp for domestic purposes	263
Electric letter post	88
Electric lighting in coal mines	350
Electric lighting on the S. S. "Servia"	352
Electric power	371
Electric railways	37, 111, 518
Electricity, conservation of	176
Electricity; what it is not	176
Electro-magnetic induction	14
Engineering progress	455
Engineering Societies.	
American Society of Civil Engineers	71, 79, 168, 256, 342, 516
American Society of Mechanical Engineers	517
American Society of Mining Engineers	431
Boston Society of Civil Engineers	168, 431
Cleveland Engineers' Club	256
Engineers' Club of Philadelphia	79, 516
Institution of Civil Engineers	256
Iron and Steel Institute	342
New York Electrical Society	80
Polytechnic Association of the American Institute	431
Engine, gas	384
Engine, marine	324
English architecture	200
English mile	69
Equilibrium of pulverulent bodies	107
Experiments on a doll	438
Explosion, phenomena of	159
Failure of axles	173
Faure's accumulator	81
Faure battery	351
Filler for porous hard woods	144
Flow of air	217
Flows, small	394
Fluid density of metals	428
Forth bridge	170
Forth bridge railway	351
Founding in brass, copper and bronze	304
Friction of timber piles in clay	273
Fuel, gaseous	450
Garabit viaduct	343
Gas barometer	515
Gas engine	384
Gas for light and heating	321
Gaseous fuel	450
Girders, continuous	49
Goldschmid aneroid	300
Gun question	113
Gun trials	435
Gun vessels for China	347
Heating and lighting	321
Heat in the tropics	299
Highly-carbonized coal	303
High-speed motor	87
Holes in steel plates	155
House architecture	133
Hydraulic experiments at Roorkee	209
Hydraulic Mortars	283
Hydrogen in iron and steel	162
Impurities in water	194

	Page.
India, building arts in	118
Indo-Mediterranean railway	410
Induction balance in surgery	359
Induction, electro-magnetic	14
Injector, theory of	313
Inoxydizable coating for iron	68
Interest, compound	385
Iodine cell	352
Iron dephosphorization	512
Iron, Russian sheet	473
Iron and steel in the U. S.	81
Iron and steel, hydrogen in	162
Iron and steel rolling	434
Iron, corrosion of	75
Iron, increasing use of	260
Iron magnetization of	36
Iron process	61
Iron structures, strains in	226
Iron tanks, efficiency of	330
Italian marine	85
Jacquet's tug system	344
Kinematics of machinery, 1, 177,	521
Lightning conductor	86
"Lightning," torpedo vessel	263
Lighting and heating	321
Light railways on common roads	290
Locomotive, new	193
Locomotives, light	286
London water supply	80
Machinery, kinematics of, 1, 177,	521
Magnetism	434
Magnetization of iron	36
Manufacture of steel	145
Manufacture of sheet iron	473
Marble in English architecture	200
Marine engine	324
Measuring electromotive force	80
Mechanical engineering	455
Mersey tunnel	431
Metal, fluid-density of	428
Meters for small flows	394
Mild steel for shipbuilding	115
Mile, origin of	69
Molecular induction	14
Molecular magnetism	186
Mont Blanc tunnel	344
Mont Cenis tunnel, ventilation of	346
Morgue of Paris	252
Mortars, Hydraulic	282
Motor, small	437
Movement of water in streams	124
Navy in 1881	83
Nerbudda railway bridge	172
Notes on railroading	11
Obituary	255
Optical experiment	176
Ordnance	113
Otto gas engine	384
Panama canal	344
Permanent way construction,	429, 432
Petroleum deposit	522
Petroleum kills the scale insect	106
Phenomena of explosion	159
Photographs by radiation	437
Piles, friction of in clay	273
Pittsburgh suspension bridge	257
Planté's secondary battery	522
Polariscope	65
Polyphemus	174
Power, electrical	37, 111, 371
Pressure of earthwork	333 353, 492
Pressure of wind	407
Prevention of dampness	476
Prevention of smoke	169
Process, Dupuy	292
Production of iron and steel in U. S.	81
Progress of marine engine	324
Properties of ammonia	352
Pulverulent bodies	107
Pure air in dwellings	314
Quality of steam	139
Railroading	11
Rails	82
Railway accidents	433, 518
Railway brakes	289
Railway, Indo-Mediterranean	410
Railway locomotives, light	286
Railway passengers per mile	82
Railway returns	432
Railway, electric	37, 111
Railways in 1880	431
Railway structures, wind pressure on	407
Rangitata, works on	276
Reactions in the basic converters	253
Revelations of sanitary science	505
Rivet holes in steel plates	155
Road working, light railways for	290
Roorkee, Hydraulic experiments	209
Russian commercial fleet	64
Russian railways	259
Russian sheet iron	473
Safety appliances	173
Sahara Desert	86
Sanitary construction	388
Sanitary science	505
Shipbuilding, mild steel for	115
Ships of steel	452
Secondary strains in iron structures	226
Sewage question	249
Simplon tunnel	297, 344
Solid steel for projectiles and ordnance	519
Speed of thought	351
Standard time	294
Steam, quality of	139
Steel	20
Steel and iron rails	82
Steel castings	279
Steel, corrosion of	75
Steel for shipbuilding	115
Steel, hardening of	260
Steel, hydrogen and carbonic x ide in	162
Steel, manufacture of	145
Steel plates, rivet holes in	155
Steel plates in Russia	260
Steel ships	452
Steel, varieties of	78
St. Gothard railway	432
St. Gothard tunnel	346, 431
Storage of electrical energy	219
Streams, movement of water in	124
Strength of copper alloys	374
Strongest of the bronzes	126
Submarine vessel, new	347
Substitute for gold	438
Suez Canal	88, 171
"Sun" electric lamp	352
Supply of water	249
Suspension bridges	399
Tanks, iron	330
Tay Bridge	172
Technical principles of architecture	221
Temperature on and below the ground	438
The channel tunnel	517
Theory of the injector	313
Tay viaduct	517
Thomas-Gilchrist process	61, 512
Thurston's address	455
Thurston on bronzes	126
Thurston, Prof. R. H., on alloys	479
Timber, artificial seasoning	86
Timber piles, friction of	273
Torpedo, new	175
Torpedo vessels	84
Transaustralian railway	173
Trial of brakes	438
Tunnel through the Alps	297, 344
Underground temperature	522
Uniform standard time	294
Ventilation	314
Ventilation in the Mont Cenis tunnel	518
Voltaic batteries	427
Water, impurities in	194
Water meters	394
Water, movement of	124
Water supply	249
Water supply of Calcutta	343
Whirled anemometers	265
Wind pressure	242 407
Work of a man	78
Works on the Rangitata	276